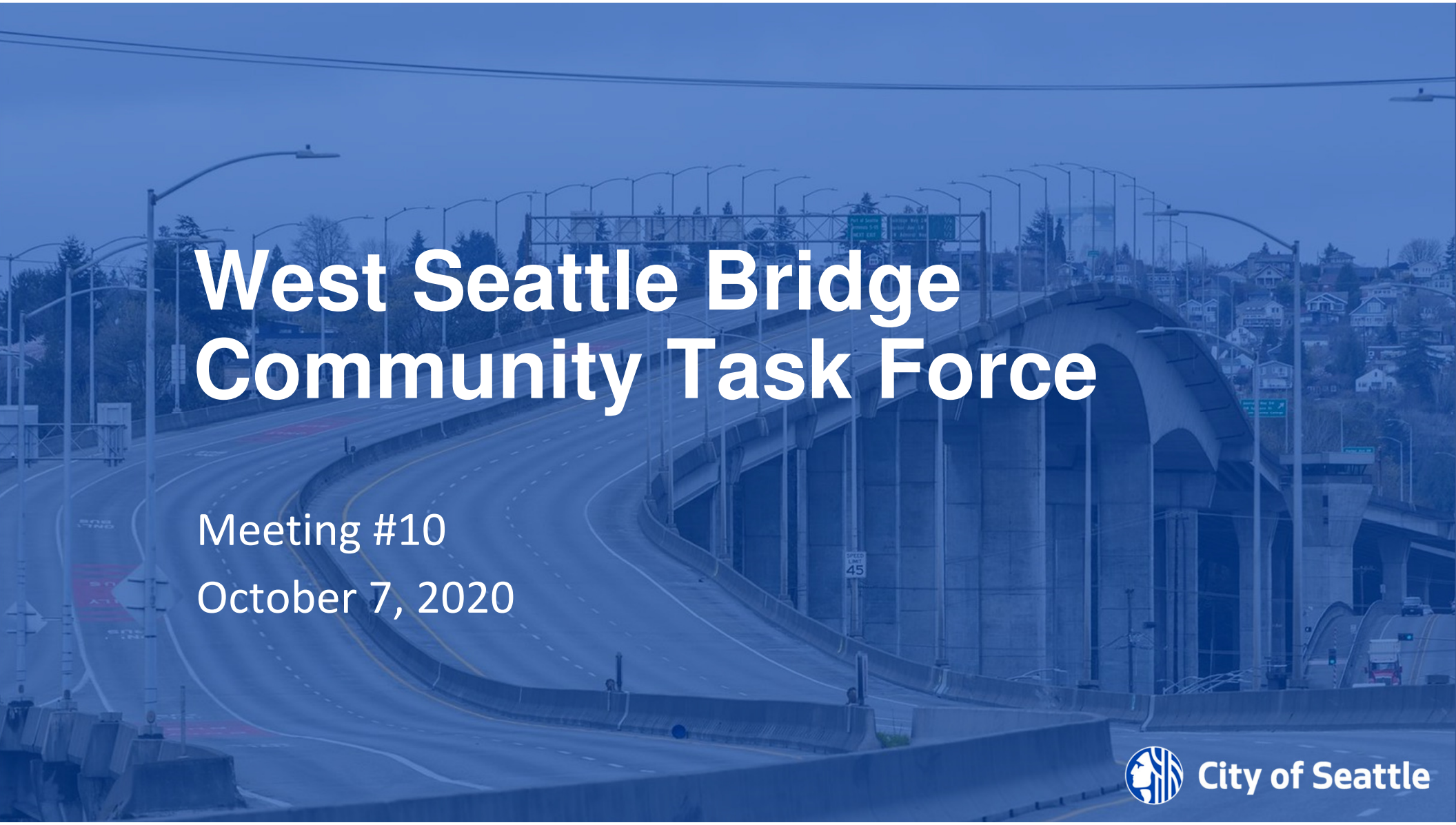


West Seattle Bridge Community Task Force

Meeting #10

October 7, 2020

City of Seattle

Agenda

- Welcome and agenda overview
- Mayor Durkan
- Bridge Updates
- Cost-Benefit Analysis presentation
- Q&A with CBA panel
- CTF discussion on CBA
- Next steps

Please note, audio and video for this event is being livestreamed and afterward will be available online and accessible to media.

Ensuring CTF meetings are accessible

- Use the chat feature sparingly; please raise your “hand” instead if you want to ask a question or make a statement
- Identify yourself every time you speak or ask a question
- If referencing something on the screen, please clearly describe it
- For questions that do make it into the chat, co-chairs/facilitators will name the CTF member and read out the question

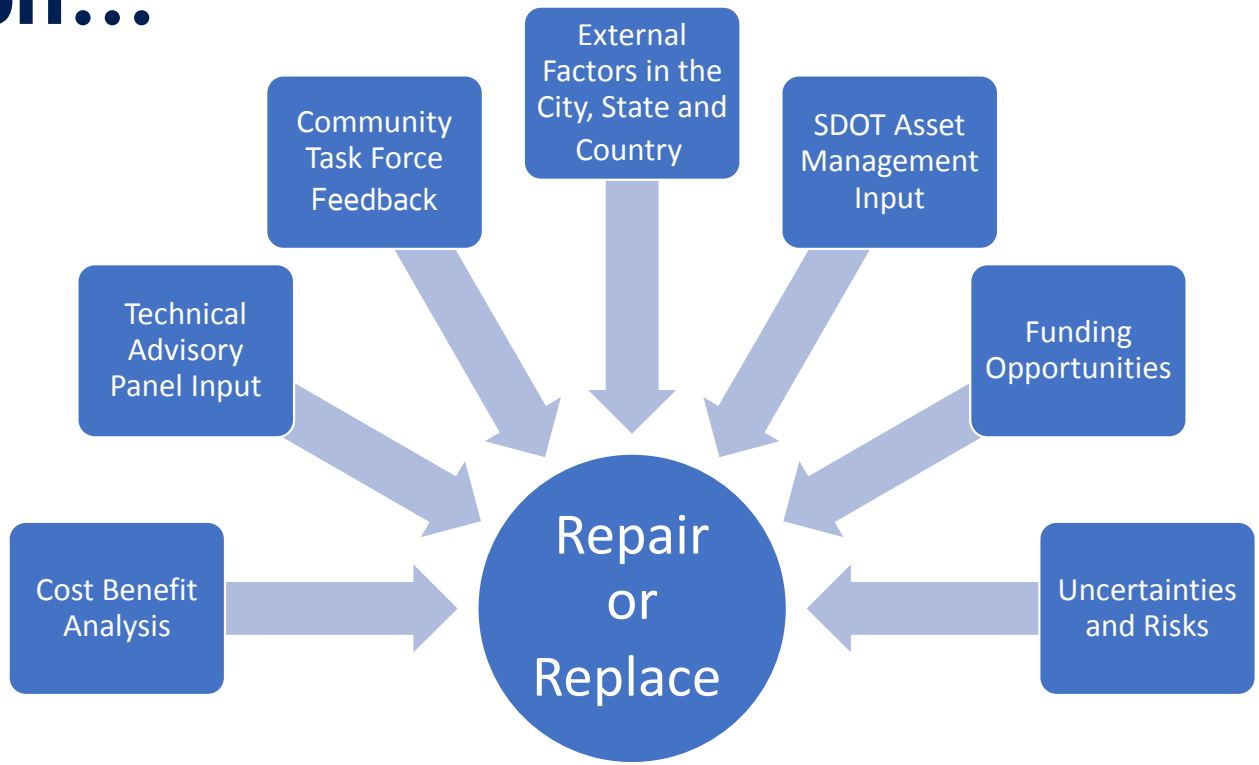
MAYOR OF SEATTLE

JENNY A. DURKAN

My Goals for the West Seattle Bridge Project

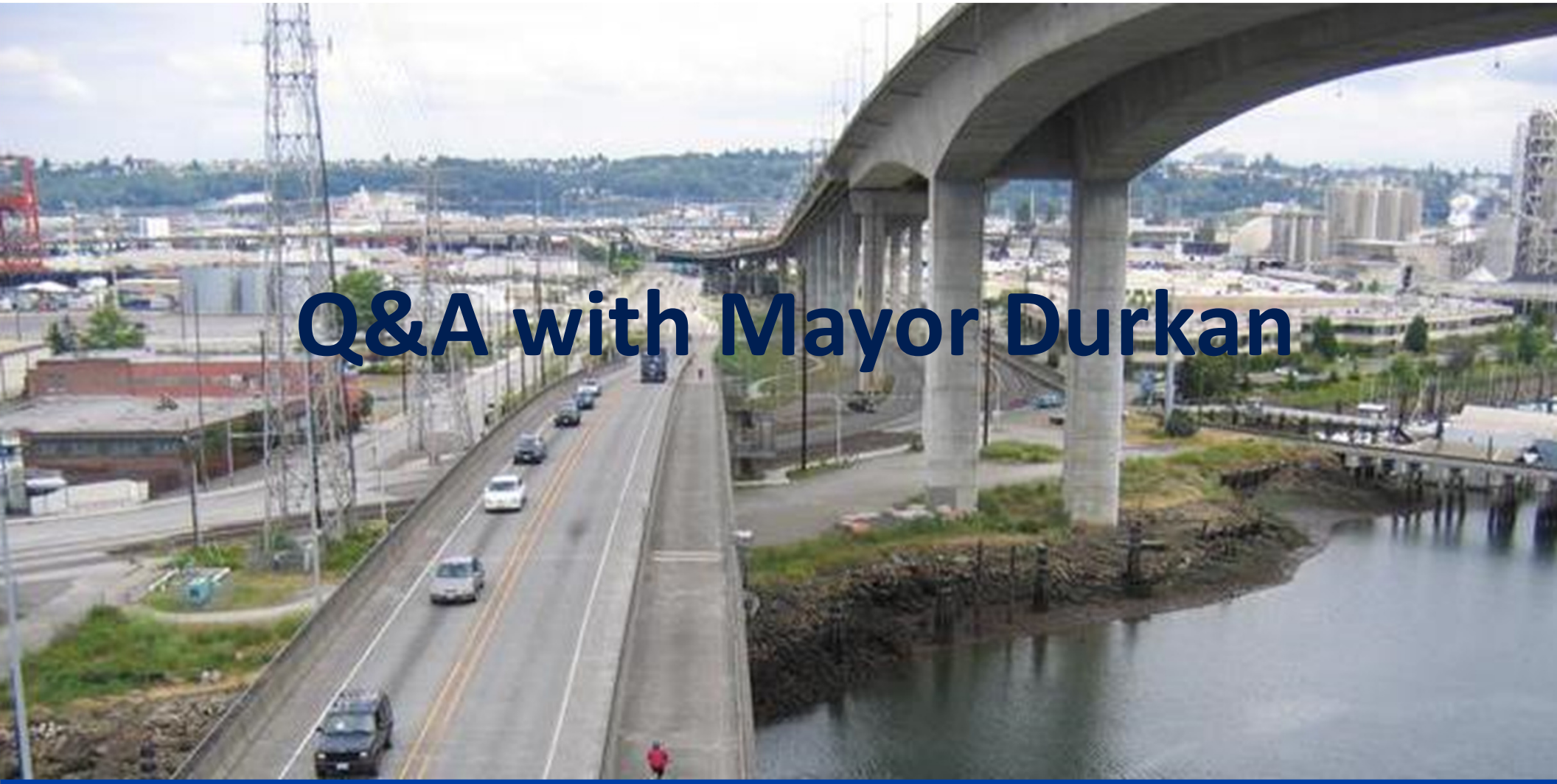
- Protect lives and preserve public safety
- Deliver the safest, fastest solution that provides the greatest certainty and benefit to all communities in and around West Seattle and the city, region, and state
- Identify the pathway with the highest level of certainty because there's no room for "hope and a prayer" or "benefit of the doubt" in 2020
- Minimize the impact of the closure on communities, particularly Black, Indigenous and People of Color communities
- Provide stability and confidence for significant economic investments being made by the Port of Seattle and Northwest Seaport Alliance, Sound Transit and others
- Secure needed funding from Federal and State partners

What I will consider when making a decision…

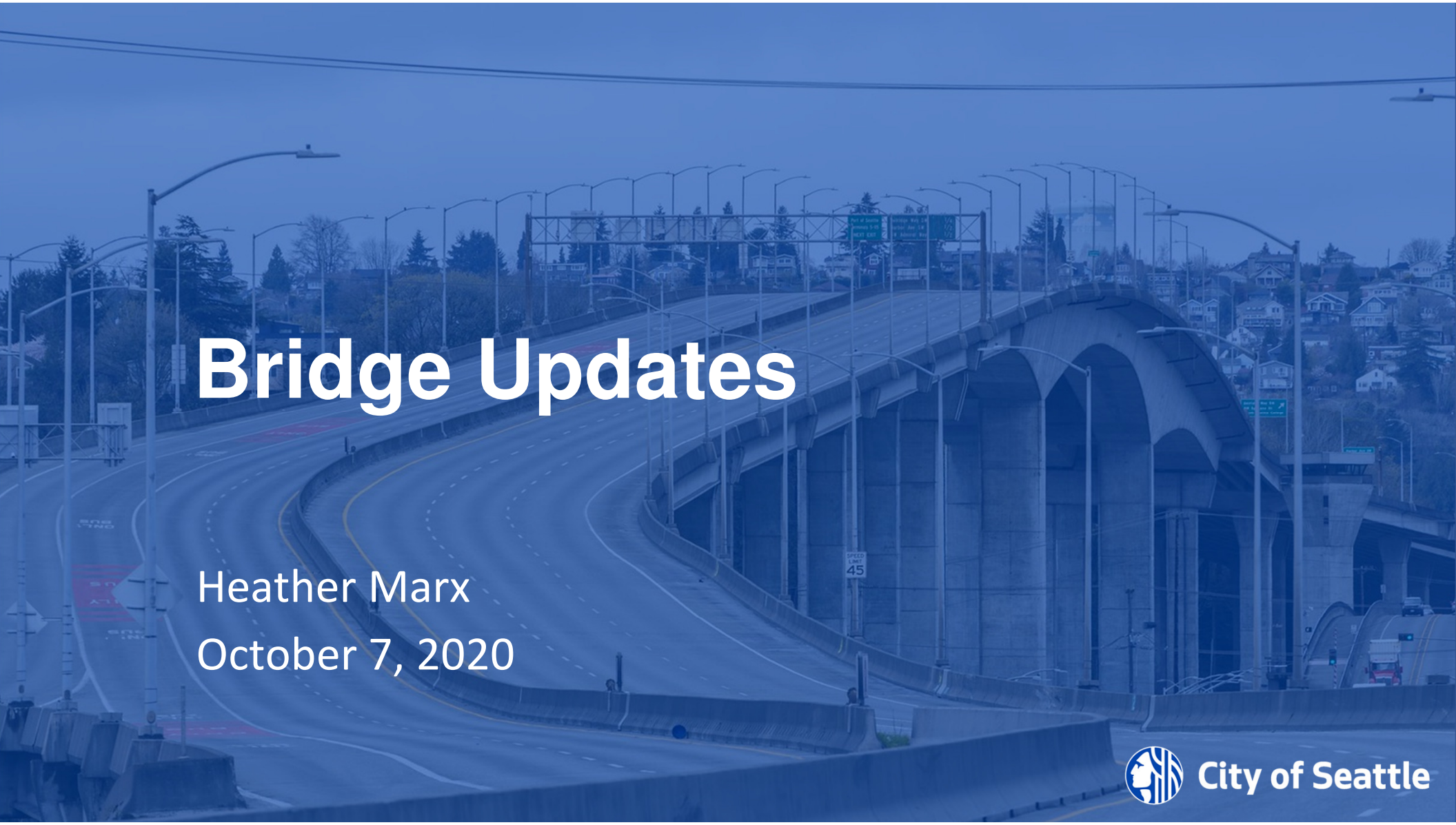


I want to hear from you…

- What factors or feedback do you have about the options for repairing the bridge?
- What factors or feedback do you have about the option for replacing the bridge?
- What are the key issues, concerns or opportunities you'd want me to consider as we make this decision?



Q&A with Mayor Durkan



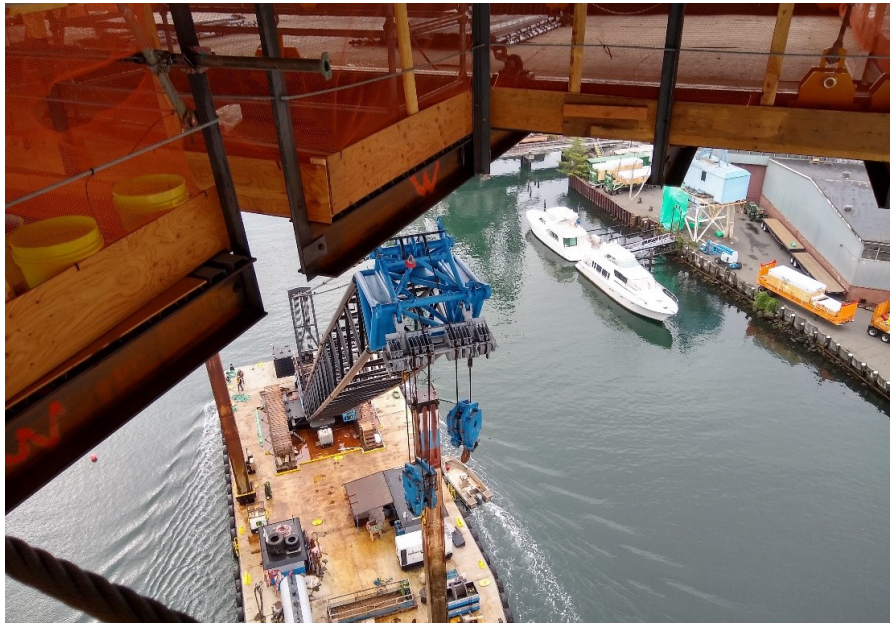
Bridge Updates

Heather Marx

October 7, 2020

City of Seattle

Stabilization Measures Underway

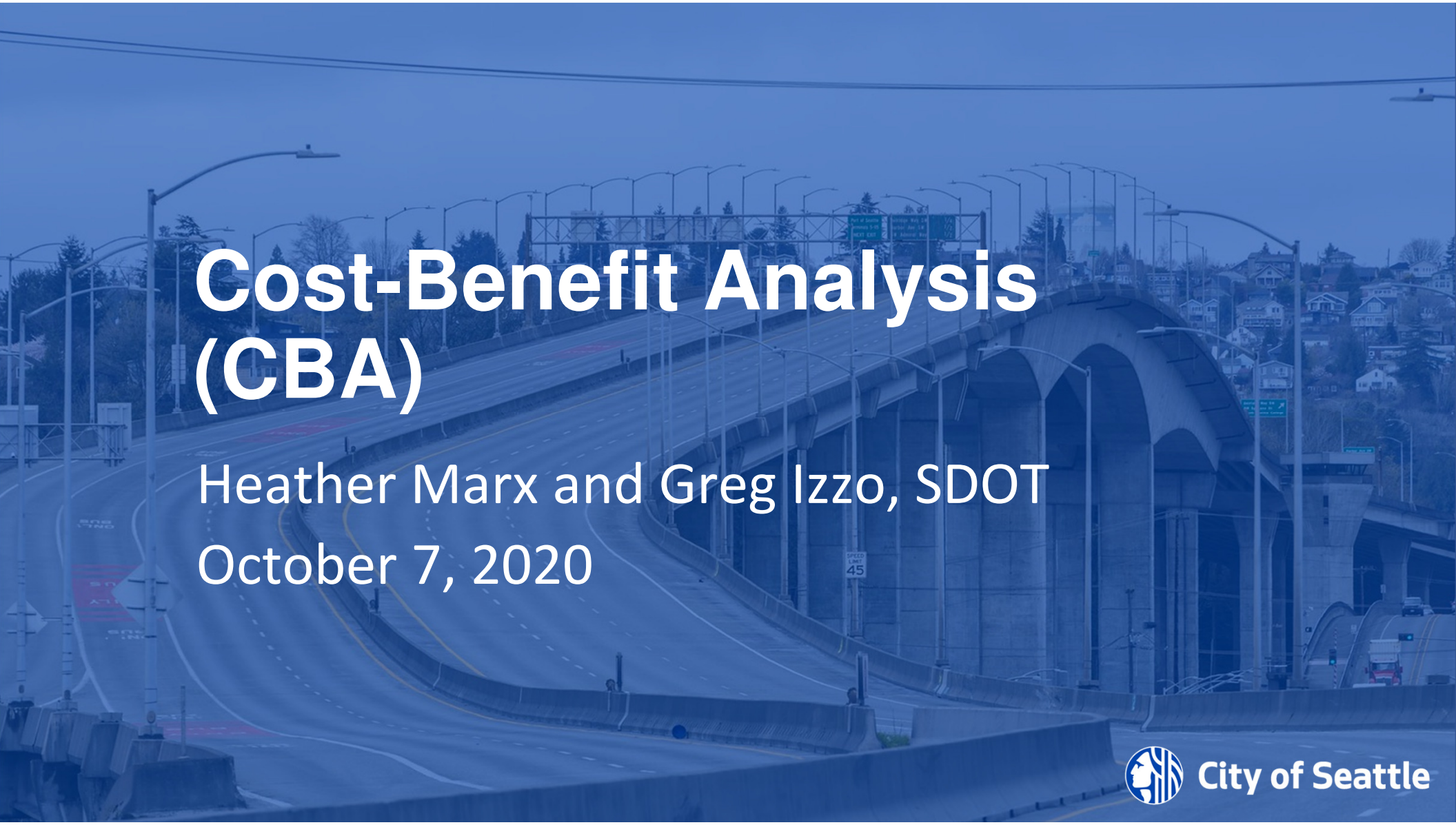


A crane barge passes beneath the work platform suspended from the West Seattle High-Rise Bridge.

The post-tensioning brackets being installed to help stabilize the High-Rise Bridge.

Traffic Mitigation & Reconnect West Seattle

- Radar speed signs:
  - Sylvan Way SW (4)
  - West Marginal Way (6) weekend of 9/26-9/27
  - Olson Place SW (southbound direction) (1) – and Airport Way SW (3)) weekend of 10/3
  - Next: SW Roxbury St
- Michigan and Corson signal improvements made weekend of 9/26
- Restriped West Marginal Way and West Highland Park Way on 10/4
- Vegetation maintenance along the West Seattle Bridge Trail on 10/2
- Repaved seven panels in the vicinity of 32nd Ave SW and SW Barton St weekend of 10/3-10/4
- Neighborhood Focus Group Home Zone+ Walks Scheduled:
  - South Park on October 5
  - Highland Park (being scheduled)
  - Georgetown (being scheduled)
- First phase of repaving at 1st Ave S/Olson Place SW/Myers Way S; second phase is 10/10 and 10/11
- First introductory meeting of Low Bridge Access Committee on 9/29; Next is 10/14 for data review



Cost-Benefit Analysis (CBA)

Heather Marx and Greg Izzo, SDOT

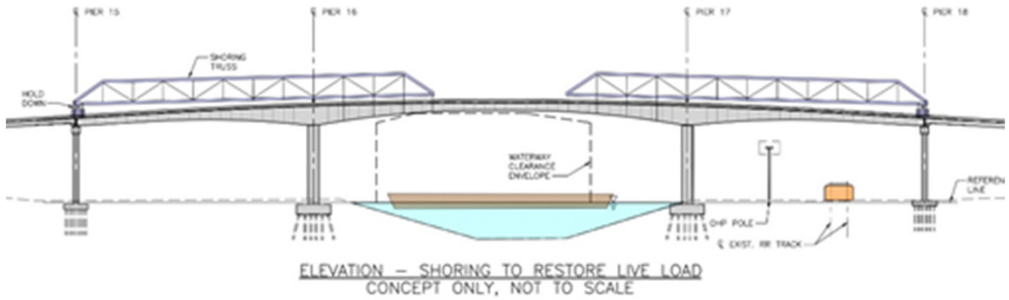
October 7, 2020

City of Seattle

Technical Advisory Panel and the CBA

- TAP is developing technical guidance on pros, cons and considerations of alternatives in the CBA
- All alternatives are technically feasible from an engineering standpoint
- TAP Key considerations include:
  - Application of Weighted Attributes
  - Geotechnical and Seismic Resiliency
  - Risks and Uncertainties
  - Pier and Superstructure Connections
- More information ultimately needed related to structural strengthening, ground treatment and foundation retrofits

Alternative 1: Shoring

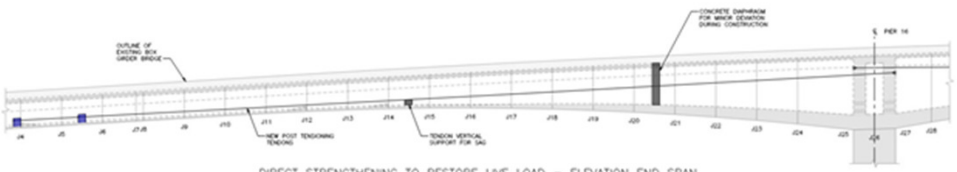


ELEVATION – SHORING TO RESTORE LIVE LOAD
CONCEPT ONLY, NOT TO SCALE

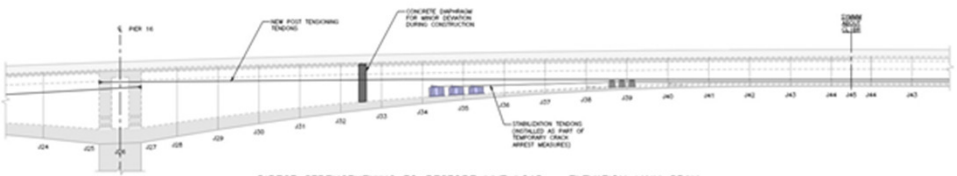
Activity	Duration	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034-2082	2083	2084-2108
Design Shoring	0.5 Years																
Construct Shoring	3.25 Years																
Traffic on Shored Bridge	5 Years																
Construct New Bridge	3.67 Years																
New Bridge Service Life	75 Years																
Direct Strengthening	1 Year																

- Estimated Capital Cost: $
- Estimated Annual Operations & Maintenance Cost: $$$
- How long could it take? Could return partial traffic by 2025
- How long could it last? 5+ years
- Biggest Risks/Drawbacks:
  - Complex, costly, short lifespan and long construction duration
  - Does not restore full capacity
  - Still requires replacement = closing the bridge again

Alternative 2: Repair



DIRECT STRENGTHENING TO RESTORE LIVE LOAD – ELEVATION END SPAN
CONCEPT ONLY, NOT TO SCALE



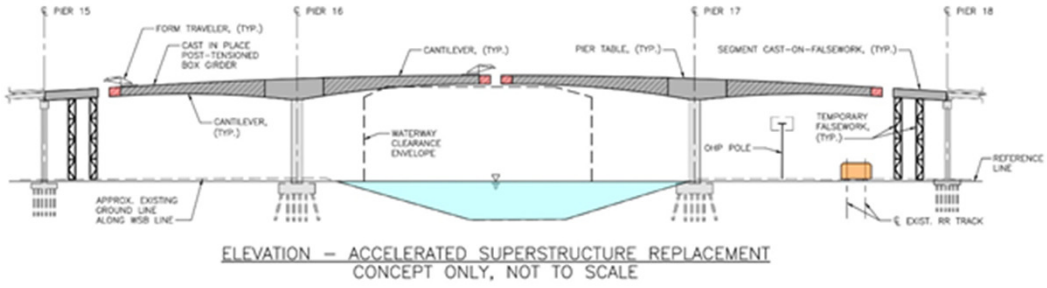
DIRECT STRENGTHENING TO RESTORE LIVE LOAD – ELEVATION MAIN SPAN
CONCEPT ONLY, NOT TO SCALE

Alternative 2 : Repair 15-Year Lifecycle

Activity	Duration	2021	2022	2023-2031	2032	2035	2036	2037	2038	2038-2113+
Design Rehabilitation	0.5 yrs									
Construct Rehabilitation	1.08 yrs									
Traffic on Rehabilitated Bridge	15 yrs									
Construct New Bridge	3.67 yrs									
New Bridge Service Life	75+ yrs									

- Estimated Capital Cost: $
- Estimated Annual Maintenance and Operations Cost: $$$$
- How long could it take? Could return traffic in 2022
- How long could it last? 15+ years (see risk below)
- Biggest Risks/Drawbacks:
  - Not confident in duration of repairs
  - Difficult to secure needed annual maintenance funding
  - Seismic performance lower than replacement alternatives
  - Still requires replacement = closing the bridge again
  - Greater uncertainty and more complexity in future (T5, LINK, traffic demand, increased density)
  - Securing funding to replace a functioning (repaired) bridge later perhaps harder than funding a closed bridge now

Alternative 4: Superstructure Replacement

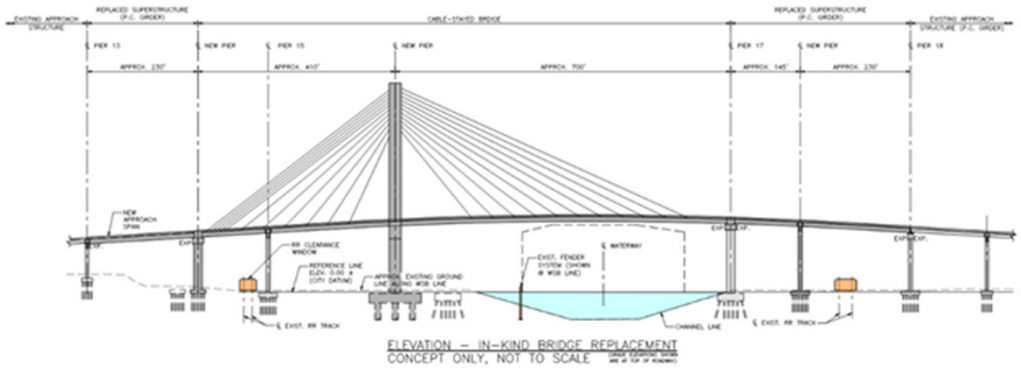


ELEVATION – ACCELERATED SUPERSTRUCTURE REPLACEMENT
CONCEPT ONLY, NOT TO SCALE

Activity	Duration	2021	2022	2023	2024	2025	2026	2027-2075	2076	2077-2101
Design Superstructure Replacement	1.5 Years									
Construct Superstructure Replacement	3.83 Years									
New Bridge Service Life	75 Years									
Direct Strengthening	1 Year									

- Estimated Capital Cost: $$$
- Estimated Annual Maintenance & Operations Cost: $$
- How long could it take? Could return traffic in 2026
- How long could it last? 75 years
- Biggest Risks/Drawbacks:
  - Mobility impacts from longer closure
  - Securing funding; larger up-front capital cost

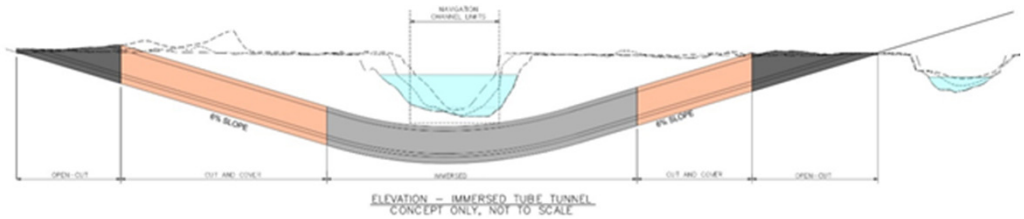
Alternative 5: Full Replacement (On alignment)



Activity	Duration	2021	2022	2023	2024	2025	2026	2027-2075	2076	2077-2101
Design Replacement Bridge	1.5 Years									
Construct Replacement Bridge	3.67 Years									
New Bridge Service Life	75 Years									
Direct Strengthening	1 Year									

- Estimated Capital Cost: $$$$
- Estimated Annual Maintenance & Operations Cost: $$$
- How long could it take? Could return full traffic in 2026
- How long could it last? 75 years
- Biggest Risks/Drawbacks:
  - Mobility impacts from longer closure
  - Securing funding; larger up-front capital cost

Alternative 6: Immersed Tube Tunnel (Off Alignment)



ELEVATION – IMMERSED TUBE TUNNEL
CONCEPT ONLY, NOT TO SCALE

Activity	Duration	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030+
Design and ROW/Easements	3.5 Years										
Construct Tunnel and Tie-Ins	5.5 Years										
New Tunnel Service Life	75+ Years										

- Estimated Capital Cost: $$$$$
- Estimated Annual Maintenance & Operations Cost: $$$$$
- How long will it take? Could return full traffic by 2030
- How long could it last? 75 years
- Biggest Risks/Drawbacks:
  - Environmental: Hazardous materials from dredging the bottom of the Duwamish Waterway
  - Mobility impacts from a long construction duration
  - Securing funding
  - Impacts to Harbor Island
  - Unique asset for SDOT to maintain

Attribute Performance

Attribute Scoring
Because Alternative 2 (Repair) was used as the baseline against which the other alternatives were compared, you will see that all attributes received the same score in that column.
The other alternatives are judged as more or less preferred than the baseline.

What Does the Shading Mean?
The darker the circle, the more preferred that alternative was for that attribute, as compared to the baseline (Repair).
The lighter the circle, the less preferred that alternative was for that attribute, as compared to the baseline.

Alternative Scores	Alternative 1: Shoring	Alternative 2: Repair (Baseline)	Alternative 4: Superstructure Replacement	Alternative 5: Full Replacement on-alignment	Alternative 6: Tunnel off-alignment
Bridge Maintenance, Inspection & Operation					
Constructability					
Environmental					
Equity					
Forward Compatibility					
Funding Opportunities					
Business and Workforce Impacts					
Mobility Impacts					
Multi-modal Impacts					
Seismic/Safety					

Boiling It Down to Repair or Replace

Repair (Alternative 2)

- Lower costs now, but higher maintenance costs over lifespan
- Quicker to get traffic back on bridge – but bridge will have to close again
- Lower attribute performance scores overall – especially in Seismic/Safety
- Success depends on bridge's reactions to repair and stabilization
- Risk that repaired structure would not fulfill its remaining design service life – approximately 40 years

Replace (Alternatives 4, 5, 6)

- More expensive now, but fewer maintenance costs over the lifespan
- Longer to get traffic back on bridge – but won't have to close again
- Higher overall attribute performance scores (Alts 4 and 5 only)
- Success doesn't depend on bridge reactions
- Lower risk that the new structure wouldn't achieve its 75+ year service life

Key Takeaways

- Significant concerns remain about the ability of repairs to last 40, 15 or even 5 years – meaning another unplanned closure is a real possibility
- All pathways will require funding partnership from others; replacement alternatives require more funding up front and repair alternative maintenance costs build up over time
- A replacement will be required at some point and there is no guarantee that this process will get easier – it will likely become more difficult

Moving Ahead with Repair options

- Repair options in the CBA including shoring and full repair; full repair performs better
- Existing contracts could be used to quickly pivot to repair design
- Would first need to complete stabilization and see how the bridge responds

Photo Credit: Chun Kwan

Moving Ahead with Replace Options

- Replacement options in the Cost-Benefit Analysis include full superstructure replacement/rehabilitation, full replacement in the same footprint, and an immersed tube tunnel
- There are other replacement concepts to explore – and some may be able to be delivered more quickly
- Designing a replacement will be necessary even if we decide to repair the bridge first and reopen it for some time. The bridge will eventually need to be replaced
- HNTB selected to design the West Seattle High-Rise Bridge Replacement Option
- Next step would be to move ahead with Type, Size and Location Study and design of bridge demolition

What Happens After the Decision?

Mayor's Decision

Repair or Replace?

Do we repair or replace the bridge?

- Repair? We can go ahead with the repair while moving forward with a TS&L study for a future replacement.
- Replace? Let's use the Mayor's decision criteria to explore different replacement options and then TS&L and an alternatives analysis.

Alternatives Analysis

OK, we've decided we're going to replace the bridge. Now what?

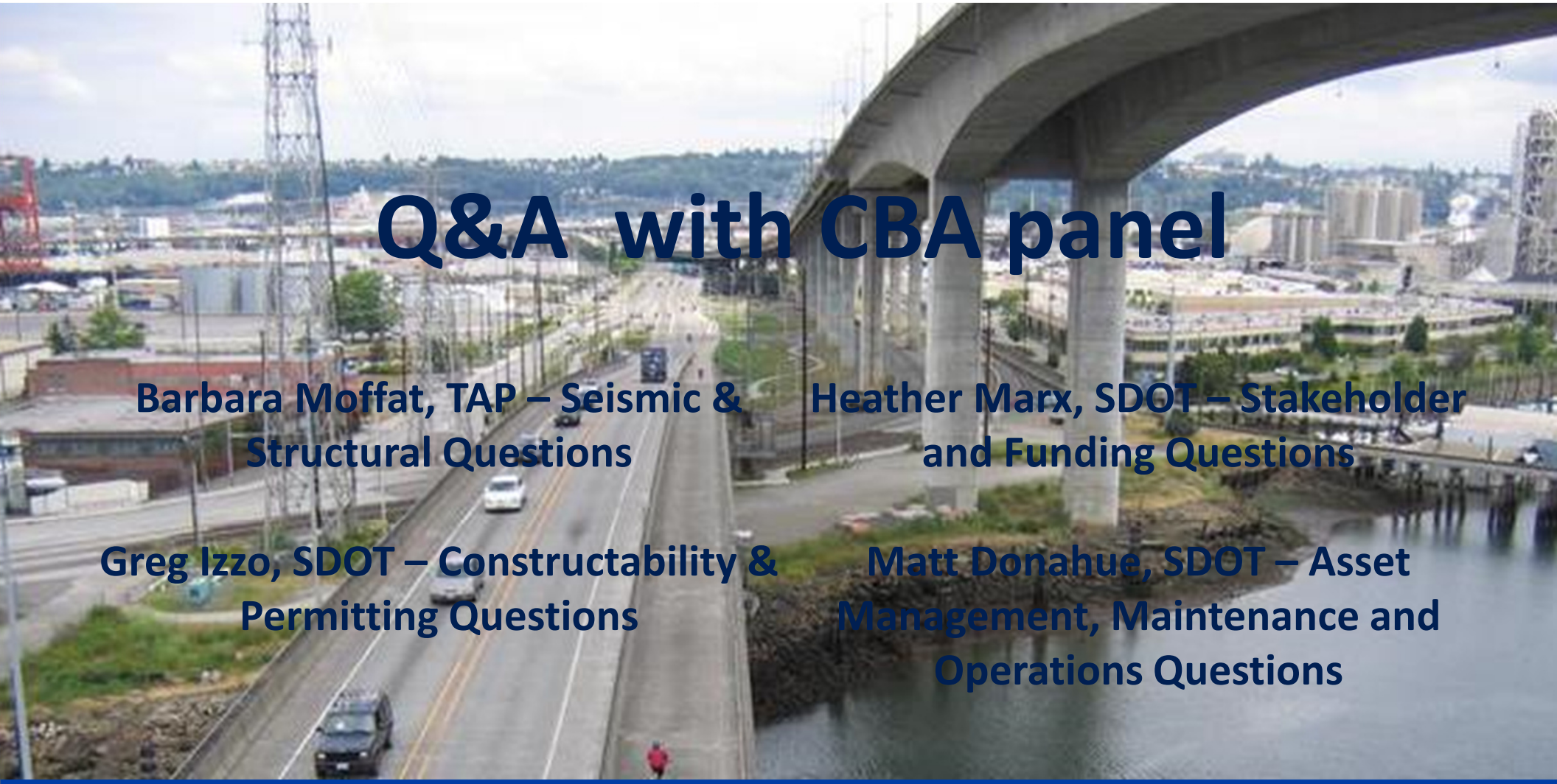
- Develop criteria to evaluate replacement alternatives
- Analyze the site and consider constraints including: environmental, marine and vehicle traffic, property impacts, utilities
- Determine feasible alternatives including locations and range of bridge or tunnel types

Type, Size & Location

Now that we've determined the best alternatives with community input, we must figure out how we're going to build it.

If it's a bridge, what kind? What should it look like? What kind of materials are best? How will it connect to the current road system? What is the best way to construct it? Which type can restore traffic the fastest?

- What does the public want?



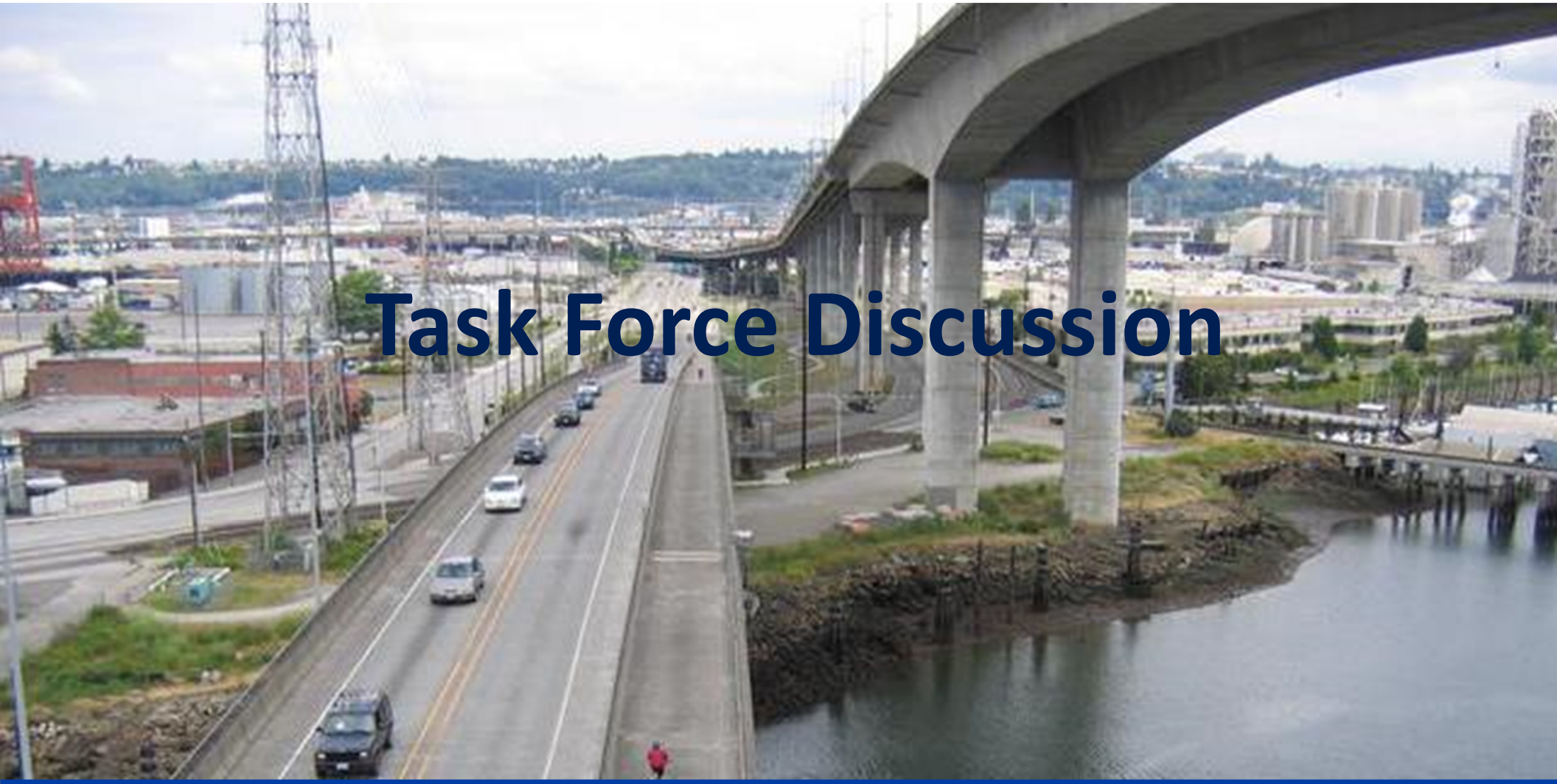
Q&A with CBA panel

Barbara Moffat, TAP – Seismic & Structural Questions

Heather Marx, SDOT – Stakeholder and Funding Questions

Greg Izzo, SDOT – Constructability & Permitting Questions

Matt Donahue, SDOT – Asset Management, Maintenance and Operations Questions



Task Force Discussion

Your Role as the Task Force

- Provide input and guidance to the Mayor
- Identify pros and cons of the replace vs the repair options
- Share your concerns and considerations with her as she makes this critical decision

Please tell us…

(*Paulina or Greg will call on each CTF member – 90 seconds each*)

- What factors favor repairing the bridge now?
- What factors favor replacing the bridge now?
- What is they key issue, concern or opportunity you'd want the Mayor to know about as she makes this decision?

Next Steps In October

- CTF co-chairs brief Mayor Durkan to provide her with your input
- Mayor Durkan briefs CTF on repair vs replace decision
- Timeline & next steps for implementing decision

Thank you!

www.seattle.gov/transportation/WestSeattleBridge